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Why don't I experience the past or present as now?

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Introduction

According to non-dynamists, or B-theorists about time, there exist, between events, unchanging relations of being earlier-than, later-than, and simultaneous-with. The ordering of events according to these relations is usually known as B-series ordering. B-theorists can (and should) allow that relative to different frames of reference there are different B-series orderings. Indeed, B-theorists typically suppose that something stands behind the complete set of B-series orderings – a four-dimensional space-time manifold – and that the space-time distances between events is invariant. It is in virtue of the space-time distance between events on the manifold that the B-series ordering is as it is from any particular frame of reference. Moreover, according to the B-theorist, this is the full story in at least this sense: there are no additional, changing, temporal properties. There is no temporal passage. Events do not start out being future, then become present, and finally become past in any objective sense. We can talk of events being future, of course, but that simply means that those events are later than our current location. But, says the B-theorists, there is no sense in which some events are objectively future, and will, later, become objectively present. This sets the B-theorists about from dynamists, or A-theorists, about time. According to this latter view there is a robust kind of temporal passage. Not all A-theorists agree about in just what this passage consists, but at the very least it involves something more than the existence of the earlier-than and later-than relations posited by the B-theorist.

One motivation for adopting a dynamical view of time is that the actual presence of temporal passage is taken to be an explanation for certain features of our phenomenology.

According to A-theorists there is some temporal phenomenology that each of us shares, namely a phenomenology of temporal passage. Though this phenomenology is hard to characterise it is, roughly, supposed to be the phenomenology according to which past events recede into the distant past, present events are particularly vivid and salient, and future events come gradually closer until they are present events. A-theorists argue that the supposed presence of this pervasive phenomenology-as-of-passage gives us reason to believe that genuine passage exists. For if we reject its existence we end up saying that we are subject to a pervasive phenomenological illusion.¹

This argument, however, has been roundly criticized (see e.g. Paul (2010), Prosser (2000, 2007, 2012, 2013) and Skow (2011)). One criticism points out the argument succeeds only if the existence of genuine passage is at least as good an explanation for our phenomenology as is the absence of that passage. Those who press this objection then seek to show that the existence of genuine passage would provide no explanation, or a worse explanation, of this particular phenomenology, than its absence.² A second criticism of the argument lies in pointing out that it is unclear exactly what content ought to be attributed to our phenomenology, and thus it is unclear how the world would need to be for that phenomenology to be veridical.³ Thus we find B-theorists responding to this kind of argument in one of two ways. They can either accept that there is some temporal phenomenology that we share which deserves the name phenomenology-as-of-passage, and then argue that this phenomenology is better explained by something other than positing actual temporal passage, or they can dispute the claim that the content of our phenomenology is, indeed, one of phenomenology-as-of-passage and thus argue that that content gives us no reason to prefer the A-theory.

Since the A-theorist needs to show both that the content of our phenomenology really is a content as of there being genuine temporal passage, and that the existence of said passage would offer the best explanation for this phenomenology, her argument for the A-theory via an appeal to phenomenology turns out to be rather more difficult to make than one might have expected. Recently, however, a new argument for a dynamical theory of time has been developed which appeals to phenomenology. Moreover, at least on the face of it, that argument does not fall prey to the second kind of criticism raised above. We find the argument

¹ See e.g. Craig (2000), Prior (1968), Smith (1994) and Zimmerman (2008).

² This is the line that Skow (2011), for instance, takes.

³ See Hoerl (forthcoming) for more on this.

in Norton (2010), wherein it is argued that the degree to which the conscious representation of events in all humans matches the objective temporal ordering of events demands explanation in terms of an objective passage of time. Unlike previous arguments that appeal to phenomenology this argument cannot fall foul of the second criticism outlined above. For it does not rest on any contentious claims about the content of our phenomenology. The argument presupposes only that we experience the world as containing events that occur in a particular order, and that said order typically matches the real temporal order of events. But even B-theorists will grant that our experience of the order of events (from a frame of reference) is typically veridical (relative to that frame of reference). Moreover, the argument does not seek to show that the presence of temporal passage is the best explanation for the fact that our phenomenological content is as-of temporal passage. So it does not directly fall foul of the first criticism either. Nevertheless, in order to succeed this new argument does need to show that the temporal phenomenology that we have – the one that the B-theorist agrees that we have – is indeed better explained by the presence of temporal passage than its absence. It is an open question whether it can give us good reason to think that is so. Perhaps it cannot. Yet the argument at least offers the prospect of wielding significantly greater dialectical force than existing arguments of its genre. That is why we are interested in the argument. In what follows we first clarify and reconstruct the argument, before moving on to evaluate it. We argue that Norton's phenomenological argument fails. This result is important for two reasons: first, because it shows that another promising route to passage fails to reach its mark and, second, because it further restricts the options open to the proponent of passage for making a case for their view.

The new argument from phenomenology

Norton writes:

Most significantly, the delivery of doses is perfect. There are no revealing dislocations of the serial order of the moments.... We do not, for example, suddenly have an experience of next year thrown in with our experience of today; and then one of last year; and then another from the present. (Norton, 2010, p. 27).... [W]hat of identifying the mechanism that restricts the delivery of moments to consciousness into the rigid series we experience? In particular, what in the neural machinery blocks us from having perceptions of tomorrow or

next year? [...] I do not think that circuitry blocking this avenue of perception has been identified [by neuroscientists]. But if passage is an illusion, there must be some mechanism that blocks us perceiving the future (p. 30).

Consider the intrinsic qualities of the time-slices. We can imagine that a time-slice contains representations of orderings of events that occur somewhere in the actual world: @. In many cases these representations will take the form of records. They might be fossils, or geological layers, or tree rings, or ledgers that exist on that time-slice. On some time-slices there will be representations of orderings of events that exist within the heads of the things that exist on that time-slice. Norton's argument is particularly concerned with this latter kind of representation: the representation of the orders of events that exist within an agent's head. Henceforth then, when we talk about represented orderings of events this is the kind of representation we have in mind. Suppose, then, that the represented orderings of events in any slice in @ matches (or is very close to) the real temporal ordering of events in @. Then we will say that *the matching hypothesis* is true in @.

Here is our best reconstruction of the argument:

1. It seems to us that events occur in a certain order.
2. The experience as of events $E_1...E_n$ occurring in a certain order, O , is at least partially determined by us being acquainted with representations whose content is that $E_1...E_n$ occur in order O : call this the *represented order of events*.
3. If there were no feature of the world that explains why the represented order of events matches the temporal sequence of events represented, then we should expect to sometimes be acquainted with representations whose content is of an ordering of events, where that ordering does not match the real sequence of events.
4. If we were acquainted with representations whose content is that events occur in an order that does not match the real sequence of events, then we would experience events as occurring in a different order to the order in which they in fact occur.
5. If we experienced events as occurring in a different order to the order in which they in fact occur, then we would have experiences as of our experience of the order of events not matching the real order of those events.
6. We do not have experiences as of our experience of the order of events not matching the real order of those events.

7. Therefore something must explain why the represented order of events matches the temporal sequence of those represented events: why the matching hypothesis is true.
8. Nothing in our best science – including the presence of B-relations – explains why the represented order of events matches the temporal sequence of events represented.
9. So there is something in our world not captured by our best science that explains why the represented order of events matches the temporal sequence of events represented.
10. The presence of temporal passage is not captured by our best science.
11. The presence of temporal passage would explain why the represented order of events matches the temporal sequence of events represented.

Therefore,

12. There is (actual) temporal passage.

In what follows our primary focus will be on rejecting (8), though we consider (5) in the context of this argument as we proceed. To see why we focus on these two premises, let us briefly consider the remaining premises. We think that (1) is common ground between those who posit the existence of passage and those who do not. (2) says that representational content partially determines phenomenological content. This seems to us to be plausible. It does not commit one to supposing the much stronger thesis that phenomenological content is exhausted by representational content. It seems to us unlikely that phenomenal content is entirely independent of representational content. There might, however, be those who think so; if so then there is a further avenue for them to pursue: rejecting premise (2).

We also find (3) plausible. Here is why we accept (3). Suppose that in w there is no explanation of why the represented orderings of events match the real temporal sequence of events. This means there is no connection between the represented order of events in w and the real temporal sequence in w . If there were such a connection, then an explanation for the correlation would be available. Now consider the set of worlds in which there is no connection between the represented ordering of events and the real temporal sequence in those events. It seems plausible that in most of those worlds the represented ordering and the real ordering of events will, at least sometimes, not match. After all, the set of worlds in question is the set of worlds in which there are two, independent parameters that are not connected in any way: temporal sequence and represented sequence. Since each can vary

independently of the other, we should expect more worlds in which the two do not match, than worlds in which they do. Thus (3) is true.

(4) gains support from (2): (4) tells us that one's experience of the order of events differs if the represented order of those events differs. If phenomenal content is partially determined by representational content, then we should expect that a change in representational content will have some effect on phenomenal content. Thus if the represented order of events is different, it seems very plausible that one's phenomenal experience of the order of those events will likewise be different. We think that (6) and (7) are reasonable: there ought to be some explanation for why represented order matches real temporal sequence. While we think that (10) and (11) can be challenged, we believe the argument falls before we get that far and so will leave these claims aside for the purposes of this paper. Our interests lie with premise (8). It is (8) whose falsity is the downfall of the new argument from phenomenology. First, however, we consider premise (5).

Premise (5)

According to premise (5) of Norton's argument if a person were to experience events as occurring in a different order to the order in which they in fact occur, then that person would have experiences as of their experience of the order of events not matching the real order of those events. That is to say, such a person would have experiences that would reveal to them that the matching hypothesis is false. Since we don't have experiences of the relevant kind we should suppose the matching hypothesis is true, and that the best explanation for its truth is the presence of temporal passage.

The defender of passage wants to offer something like the following argument:

1. In the absence of passage the matching hypothesis would (most likely) be false.
2. In the absence of passage we would have an experience as of the matching hypothesis being false.
3. Since we do not have an experience as of the matching hypothesis being false, we know that the matching hypothesis is true.
4. If the matching hypothesis is true then we have reason to believe in actual passage.

Of course, this argument has no dialectical bite with the B-theorist since she rejects (1).

But something like this mini argument is what is motivating A-theorists, and in particular is motivating Norton.

Yet according to the Norton-style defender of passage every world that lacks passage is one in which there is *no connection* between represented orderings of events and the real temporal sequence of those events. If there is no connection between those orderings then the latter – the real ordering of events – cannot in any way “impinge” upon the former. It cannot cause the representational orderings to be one way rather than another; the representational orderings cannot be grounded in the real orderings, and so forth. But the disconnection between the two orderings puts (3), above in danger. Indeed, the B-theorist can offer this alternative argument:

1. In the absence of passage there is no connection between represented order and real order (says the A-theorist).
2. We do not know whether our world contains passage (this is the issue in question).
3. If there is no connection between represented order and real order, then the represented order cannot provide any evidence for the real order.
4. In worlds that lack passage experiences as of the matching hypothesis being true (or false) are disconnected from the real temporal order.
5. So experiences as of the matching hypothesis being true (or false) are no evidence for the truth or falsity of the matching hypothesis in worlds that lack passage.
6. Thus our actual experience as of the matching hypothesis being true cannot differentiate between ours being a world in which there is passage, and our experience is evidence for the truth of the matching hypothesis, and ours being a world that lacks passage, and our experience is no evidence at all as to whether the matching hypothesis is true or false.
7. Therefore the presence of the experience of the matching hypothesis seeming true is no evidence that it is true and so it is no evidence for the existence of actual passage.

The problem for the defender of passage is that if she is right and in the absence of passage there is no connection between the experience and representation of order, on the one hand, and real temporal sequence, on the other, then it is hard to see why we should expect that if actually there were no passage we would experience the matching hypothesis as false. So it

is hard to see why we *should* accept premise (5). In fact we think we should accept (5). The problem for the defender of passage is that she has led us into an unpalatable scepticism.

We think the B-theorist is in a good position to vindicate (5). For she can just accept that there is a robust connection between our represented orderings of events and the order of those events in the B-series, and then go on to explain the nature of that connection without appealing to temporal passage. In the next section that is precisely what we aim to do.

Explaining the matching hypothesis

Suppose we do not know whether the actual world is one in which there is temporal passage. That is, after all, the very issue that is up for debate between the A-theorist and the B-theorist. Everyone, however, agrees that the actual world is one in which moments are ordered via earlier-than and later-than relations. We will make one further assumption here: that past and future events exist. Not all A-theorists will accept this assumption: presentists and growing block theorists being the notable exceptions. Norton, however, assumes that past and present times are as real as present times: he is an eternalist. More importantly, the argument that Norton presents can only succeed if past and future events are real. After all, in essence Norton asks the B-theorist the following question: if all that exists are past, present, and future events related by unchanging B-relations, then why do we experience the events that occur now, as being now, rather than experiencing the events that occurred in the past or the future as being now? The possibility of experiencing past or future events as though they were now could only arise if those events exist. Thus any A-theorist who avails herself of Norton's argument must already allow that past and future events exist. Given this assumption, let us consider all of the instants in @. Let us call the three-dimensional object that is @ at any one of these instants a *time-slice* of @.

Consider a world, α , that is an intrinsic duplicate of @ in all respects – a world in which intrinsic duplicate slices of those in @ are ordered via the B-theoretic relations in the same way as they are in @ – except that α fails to contain passage. Then α is a world without passage in which the matching hypothesis is true. Now consider a world, δ , in which qualitatively similar events to those that occur in α (and thus @) are arranged in a similar B-series order to the way those events are ordered in α . That is, if one could take a bird's eye view of both δ and α one would see two worlds whose distribution of events looks very similar indeed. Let us suppose that, like α , there is no passage in δ .

Moreover, δ is a world in which at least some perceptual systems receive signals from distal locations in space and time but in which those perpetual systems have no reliable way of determining whether those signals are emitted from a proximal or distal temporal location. Thus the representations of temporal orderings of events that are formed on the basis of this perceptual data frequently do not match the real temporal ordering of those events. The matching hypothesis is false in δ .

One way of thinking about Norton's argument is as follows: if the actual world lacked passage, then why should it be like α , in which the matching hypothesis is true, rather than like δ , in which it is false. According to Norton nothing in current science can explain why our world is like α , not δ , so we should posit the existence of actual passage to do this work. We disagree.

The most obvious B-theoretic explanation of the matching hypothesis is that a synchronic representation, at t , of an ordering of events is generated by the order in which those events come to be represented, and the latter is the result of the order in which those events in fact occur at times before t . Thus the real temporal sequence of events causes represented events to have the order they do in experience. This first-pass explanation, however, pushes the question back. For we now need to explain what the connection is between events and experience such that when events occur in a particular temporal order we perceive or otherwise causally interact with those events in that order. To make some headway, let us return to consider δ .

In δ the connections between the represented orderings and the real temporal sequences of events falsify the matching hypothesis in the following way: (1) the perceptual system of agents in δ frequently receive signals from far away locations in space-time and (2) agents cannot reliably determine whether such signals are from distal or proximal locations via the use of their perceptual systems alone. Thus, for agents in δ , the location of events is often misperceived, and their order often misrepresented.

In the actual world the conjunction of (1) and (2) is false: our perceptual systems rarely receive signals from far off locations in space-time, so (1) is false. (2) is true; on the rare occasions when we do receive signals from distal locations our systems cannot reliably determine whether the signals are from distal or proximal locations. Consider, for instance, the experience of seeing light emitted from a star located in Orion's belt. Most of us report that the perception of the star is synchronous with the star that is being perceived. But that is incorrect; the star *as experienced* is located in the distant past. However, we cannot directly

determine that the signal is from the distant past via our perceptual mechanisms alone. To do that we need to know that the speed of light is finite and that the star is located very far away. With these facts, we can then infer the temporal location of the star.

Were we to have evolved in an environment in which we frequently receive far-distal signals *and those signals matter to our evolutionary success*, we would have developed ways of determining the spatio-temporal distance of the emitter of those signals. If there no way to determine – for any signal – whether that signal was emitted proximally or distally, nothing like a complex organism would have evolved. For without a way to tell whether a signal is proximal or distant, an organism would have no reliable way of navigating its environment.

When it comes to signals from *proximal* locations in space-time, matters are different. For such signals, we typically perceive the events that caused the signals to be emitted as ordered in the manner that they are in fact ordered. For spatial ordering we use basic visual cues, combined with higher-level (mostly top-down) processing in the visual cortex, to determine the relative location of objects. Perceptual psychology has taught us the nature of these visual cues and the circumstances under which we are likely to be subject to an illusion and thus to misrepresent the spatial ordering of objects. Note – and this is key – in order to explain this spatial analogue of matching, there is no need to appeal to anything like a spatial notion of passage, i.e. some special property of “hereness”.

Norton asks why it is that we do not perceive the distant past or future in amongst our perceptions of the present, and why we do not therefore misrepresent the order of those events. These are two different questions and it is important to tease them apart. Creatures of sufficiently rich representational capacity may well perceive the past and future alongside one another, as we do when we perceive the past and the present along side one another in the case of experiencing a distant star. But such creatures had better not systematically misrepresent the actual temporal order of events. For misrepresentation of that kind would be disastrous, from an evolutionary perspective. Instead, for such creatures to be evolutionarily savvy they must differentiate the experience of past and future events by perceiving them *as being* past and future respectively, thereby accurately representing the true temporal order of events. Thus such creatures will be very different from us. But just as in our world the conjunction of (1) and (2) is false, so too in such worlds this conjunction will be false. But in these worlds it will be false because although (1) is true, (2) is false.

But agents like us in the actual world are not like these creatures and we know why.

We rarely receive signals from very distant locations in space-time because of the nature of signalling in our world, which is capped by the finite speed of light. We perceive objects when photons that have causally interacted with those objects hit the retina in our eye and then visual processing occurs. The problem in the actual world with trying to visually perceive objects that are very distant in space-time is that photons scatter after they have causally interacted with an object. For very distant objects, the photons in question will have scattered too much for our retina to recover the number needed to produce an integrated perceptual image picture. If either photons did not scatter in the way they do, or if our perceptual systems were more sensitive, capable of catching photons that are quite scattered, then we would be able to experience distant objects with ease. But neither of these things is the case. Because photons travel at the speed of light (300,000km/s) and tend to scatter, the brain assumes that if event E is perceived at t , and E^* at t^* , then E occurred at t , and E^* at t^* , and that E occurred earlier than E^* . In most situations that will be roughly right. The perception of distant objects (i.e. objects that are light-years away) is a case in which it won't, but that is a special case, and one that doesn't really matter from an evolutionary point of view (it's not like we're being hunted by far off stars!)

In general then, where (1) is true, (2) is false, and *vice versa*. We suspect this will be the case in every well-behaved worlds in which complex organisms evolve. If so, then exactly what the connection is between represented orderings and real temporal sequences of events might vary in different worlds. But there will be some explanation for why the conjunction of (1) and (2) is false which will not appeal to temporal passage. Certainly in the actual world around here in space-time we know why the conjunction of (1) and (2) is false, and thus we know why the matching hypothesis is true; and we know this without any appeal to temporal passage.

Conclusion

The new argument for passage fails. *Contra* Norton, there is a B-theoretic explanation available of the connection between the represented ordering of events the actual ordering of events, and thus premise (8) in the argument is false. The explanation can be framed in terms of signalling. Facts about signalling plus plausible facts about the evolution of organisms with perceptual capacities capable of detecting actual signals strongly suggest that evolved perceptual mechanisms will track the real temporal ordering of spatio-temporally proximal

events.

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